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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 24

Application Number: 09/560,268
Filing Date: April 26, 2000
Appellant(s): LEE ET AL.

Mark J. Gebhardt
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/3/03.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims 64-65, 67-95 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,116,254	Shiramizu	9/2000
6,110,839	Nakano et al.	8/2000

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 68-70, 72-75, 77-81, 83-86, 88-91, 93 are rejected under 35 U.S.C. 102(e) as being anticipated by Shiramizu (US 6,116,254).

Shiramizu teaches a solution that is well known to one skilled in the art comprising: HCl, 37 wt%, H2O2, 30 wt%, and pure water (DI water) and they have a ratio of 1:1:6 respectively (col. 1, line 29-33).

Referring to claims 68, 72, 73, 77, 79, 84, 89, this solution would inherently have metal nitride etch rate of about 50 angstrom/min to 250 angstrom/min and cobalt etch rate greater than about 1000 angstrom/min because it is made from essentially the same concentration of each chemical as that of claimed invention. HCl is at 37 wt % comparing to claimed 37 wt%, H2O2 is at 30 wt % comparing to claimed 29 wt %, and the ratio of these chemical is within claimed ratio, HCl:H2O2:H2O as 1:1:6.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 64, 65, 67-95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano (US 6,110,839) and Shiramizu (US 6,116,254).

Nakano teaches a solution (claimed etching composition) comprising: HCl (claimed mineral acid), H2O2 (claimed peroxide), and water with their respective ratio of 1:1:10 (col. 6, line 39-44). Unlike claimed invention, Nakano is silent about using DI water; however, using DI or pure water to prepare similar chemical bath is well known to one skilled in the art as shown by

Shiramizu (col. 1, line 32), and would have been obvious so that the chemical bath doesn't contain other contamination.

Referring to claims 68, 72, 73, 77, 79, 84, 89, this solution would inherently have metal nitride etch rate of about 50 angstrom/min to 250 angstrom/min and cobalt etch rate greater than about 1000 angstrom/min because it is made from essentially the same concentration of each chemical as that of claimed invention. HCl is at 36 wt % comparing to claimed 37 wt%, H2O2 is at 30 wt % comparing to claimed 29 wt %, and the ratio of these chemical is within claimed ratio, HCl:H2O2:H2O as 1:1:10.

Referring to claim 94, unlike claimed invention, Nakano doesn't describe HCl and H2O2 being used have a concentration of 37 wt% and 29 wt% respectively. However, he teaches HCl and H2O2 having concentration of 36 wt% and 30 wt% respectively. These concentration would essentially is the same as claimed concentration. It would have been obvious at the time of the invention for one skilled in the art that the final concentration being used would depend on the desired etch rate and material being etched; therefore, one skilled in the art would determine the chemical concentration through test run in order to obtain the optimum chemical concentration for the etching with a reasonable expectation of success.

(11) Response to Argument

Response to Arguments

5. The 103(a) rejection of claims 64, 65, 67, 71, 76, 82, 87, 92- 95 over Shiramizu has been withdrawn.

Referring to applicant's argument that solution from Shiramizu or Nakano has similar components but does not necessarily have the same etch rate as the claims is found unpersuasive because applicant has not showed any factual evidence for this conclusion.

Referring to applicant's argument that Shiramizu and Nakano describe a cleaning solution not etching solution; Shiramizu and Nakano solutions would remove metal from the substrate, it would be obvious that their solutions are able to etch metal because etching is also removing metal from the substrate. Furthermore, the claims described as an etching solution that has the metal or metal nitride etch rate. This would describe one of the properties of the solution. They are not described as a metal etching solution. Since Shiramizu and Nakano describe the solution with the same chemicals and concentration, the solution would have the metal or metal nitride etch rates as the claimed invention.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

DVD
June 5, 2003

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